



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Jeffrey B. Kuhl
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For : APPARATUS FOR DRYING A
STACK OF FLATS
Group : 3749

INFORMATION DISCLOSURE STATEMENT

Trenton, New Jersey
February 18, 2004

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

This statement represents that the prior art listed herein includes, in the opinion of the applicant, the closest prior art of which the applicant is aware. The patents enclosed in this report are listed as follows:

<u>PATENT NO.</u>	<u>PATENTEE</u>	<u>ISSUE DATE</u>
2,609,100	Vitale	9/2/52
3,300,871	O'Connor	1/31/67
3,386,180	Balz et al	6/4/68
3,998,656	Grotto	12/21/76
4,064,635	Kuhl	12/27/77
4,134,215	Kuhl	1/16/79
4,155,293	Spiel et al	5/22/79
4,170,241	Clapp	10/9/79
4,173,830	Hanson	11/13/79
4,651,440	Karl	3/24/87
4,702,777	Kuhl	10/27/87
5,067,192	Guelfi et al	11/26/91
5,185,041	Anderson et al	2/9/93
5,212,876	Berit	5/25/93
5,802,733	Hougham	9/8/98
6,298,575	Aikins et al	10/9/01
US2002/0033550	Suehara	3/21/02
(Application Publ.)		(Publ. Date)

United States Patent No. 2,609,100 discloses a "Drying Machine Having Centrifugal Units" patented September 2, 1952 by S.L. Vitale. The Vitale patent discloses a drying machine which includes a turntable with a plurality of vertically disposed bearings spaced in a circular path outwardly from the center. Multiple open sided frames include bearing engaging portions rotatably mounted in the vertical bearings. Each frame has a pair of spaced vertical uprights positioned on opposite sides of the axis of the associated bearing which is oriented in a plane passing through the axis of the bearing. Each frame includes a pair of horizontally oriented coaxial trunnion bearings mounted thereon. A perforated receptacle is vertically disposed and includes trunnions positioned on the sides thereof between the upper and lower ends. The receptacle is mounted such as to be capable of tilting in the trunnion bearings in each frame. Each of these frames includes a portion adapted to receive a coupling. The trunnion bearings are mounted on the uprights. A latching device is mounted on the frame and is engageable with the receptacle in the vertically rotatably position. A power drive receptacle rotating device has a power transmitting coupling coupled thereto positioned adjacent the turntable in selective successive registration with each of the frames responsive to rotation of the turntable. The coupling is selectively engageable and disengageable from the coupling receiving portion of the frames responsive to arrival of each frame in registry with respect to the coupling itself. The present invention is

particularly patentably distinct when compared with the patent described hereabove. This is because the present invention shows a novel apparatus for drying a stack of flats not shown heretofore. A housing is included which defines a base level for receiving a stack of flats moved thereinto for heating and drying thereof. A lifting head is provided which is movable up and down within the housing such as to be able to contact the stack of flats positioned thereabove at the base level to aid lifting thereof to a position above the base level. This lifting head is movable preferably in a rotatable manner relative to the housing about a lifting axis of rotation extending vertically. A stack lifting mechanism is also included positioned within the housing at a location below the base level. This lifting mechanism for stacks is capable of being positioned at a retracted level located below the base level within the housing. The stack lifting apparatus is attached to the lifting head, and is also vertically movable upwardly within the housing to be movable to the base level for facilitating engagement of the lifting head with respect to the stack of flats from beneath. It also allows lifting vertically to a spin level which is located vertically above the base level within the housing. A drive engagement apparatus is also provided mounted within the housing at a position above the stack of flats which is positioned therein at the base level. This drive mechanism is engageable and is mounted within the housing to be rotatably movable therewithin about a drive axis of rotation. The drive engagement device is

adapted to engage a stack of flats from above responsive to movement of the stack of flats upwardly and to abutting contact therewith in order to allow the urging of rotational movement of the stack of flats responsive to rotational movement of the drive engagement device. A drive is also included within the housing above the stack of flats positioned at the base level. This drive is operatively attached to the drive plate for urging rotational movement responsive to operation of the drive in order to achieve spin drying of a stack of flats held at the spin level between the drive engagement means and abutment therewith from above, and the lifting head in abutment with the stack of flats from below. As such, it is urged into contact therewith by the stack lifting device which is positioned at the stack level within the housing. The prior art patent described above does not anticipate nor render obvious the present invention as claimed, and for this reason, the present invention as detailed herein is deemed to be patentably distinguishable thereover.

United States Patent No. 3,300,871 discloses a "Centrifugal With Cover And Brake Assembly" patented January 31, 1967 to F. O'Connor and assigned to Ametek, Inc. The O'Connor patent discloses a centrifugal dryer including a housing with an upper chamber and a basket carrier mounted therein for rotation about a vertical axis. A cover is included for closing the open upper end of the housing. A pivot pin is mounted in the housing to which the cover is mounted, and a pulley is connected to the basket carrier. A brake is adapted to be applied to the pulley

to stop rotation of the basket carrier. A foot treadle is connected to the brake for applying it to the pulley. Linkage is included extending the foot treadle to the pivot plate for the cover. A mechanism is provided between the linkage and the pivot pin for the purpose of preventing the opening of the cover when the brake is released, and for releasing the cover upon applying sufficient force to the foot treadle to cause the brake to stop the basket carrier from moving. The present invention is patentably distinguishable from the above referenced patent since the present invention includes a unique dryer for drying a stack of flats, wherein a stack of flats are entry transported into a spin drying housing at a base level. The stack of flats are then engaged with respect to a rotatable lifting head. The lifting head is then lifted upwardly, and the stack of flats is engaged thereabove into abutting engagement with the drive mechanism engagement device positioned therebelow at the spin level located above the base level within the housing for drying. This drive engagement device is preferably positioned in registration with respect to the stack of flats to facilitate simultaneous rotational movement thereof responsive to rotation of the drive engagement device. Thereafter, the drive engagement device is rotationally driven to urge simultaneous rotational movement of the stack of flats to facilitate spin drying. A lifting head and the stack of flats thereabove then move upwardly to release the stack of flats at the base level to allow exiting of the stack of flats from the spin drying housing along the base level. This

unique configuration functions in the patentably distinct method described immediately hereabove, and as such, is patentably distinguishable from the above-identified United States Patent, and as such, the present invention as claimed is deemed to be patentably distinguishable thereover.

United States Patent No. 3,386,180 discloses a "Continuous Centrifugal Device" patented June 4, 1968 to G. Balz et al and assigned to Roto-Finish Company. The centrifugal mechanism of the '180 patent is for the purpose of treating discrete products and includes a subassembly mounted on a support for rotation about an axis. A rotating mechanism is included for the subassembly. The subassembly itself includes a frame with a loading mechanism adapted to introduce products into the subassembly at a zone substantially coincident with the axis of rotation. A discharge device is adapted to remove products from the zone at the axis of rotation. Conveying means is adapted to receive products to be treated at the loading means. These products are conveyed to a position spaced radially from the axis of rotation to cause the products to revolve about this axis. Then the products are conveyed to a discharge means. In this manner, the products charged to the apparatus are treated by being subjected to centrifugal force as necessary. The subject invention provides a distinctively configured apparatus for drying of a stack of flats, and includes a housing defining a base level for receiving flats conveyed thereinto for drying. A lifting head is included which is vertically movable within the

housing to move a stack of flats vertically from the base level. The movement axis of the lifting head extends vertically. A stack lifting device is included within the housing below the base level, and is movable to the retracting level as needed. This lifting mechanism for stacks is attached to the lifting head for vertical movement upwardly to allow engagement of the lifting head with respect to the stack of flats to facilitate movement thereof to the spin level. A drive engagement mechanism is included mounted within the housing at a position above the stack of flats at the base level. This device is adapted to engage a stack of flats from above responsive to movement thereof upwardly into abutting contact therewith for urging rotational movement of the flats responsive to rotational movement of the drive engagement device. A drive means is also included for powering the rotational movement of the drive plate. The patent reference defined above is distinguishable from the present invention since there is no teaching of the configuration as claimed herein in the disclosure and/or claims of the above-identified patent. For this reason, the present invention is deemed to be patentably distinguishable thereover.

United States Patent No. 3,998,656 discloses a "Method And Apparatus For Cleaning Cylindrical Air Filters" patented December 21, 1976 to L.P. Grotto. The cleaning apparatus of the '656 patent includes a housing with a platform therein rotatable about an axis. The housing defines an opening in registration with the platform. A closure unit is slidable in and removable

from the opening for selectively sealing thereof. A motor is positioned on the outside of the closure unit with a drive shaft extending within the unit in line with the axis of rotation of the platform. A tapering drive is connected to the drive shaft within the unit and includes at least one passage extending therethrough which is generally aligned with the axis. A means are included for connecting a passage with the air ambient to the housing, and a means are also included for lowering the pressure in the housing to draw ambient air from the passage through the filter. The present invention is patentably distinguishable from the above referenced patent since the present invention includes a unique dryer for drying a stack of flats, wherein a stack of flats are entry transported into a spin drying housing at a base level. The stack of flats are then engaged with respect to a rotatable lifting head. The lifting head is then lifted upwardly, and the stack of flats is engaged thereabove into abutting engagement with the drive mechanism engagement device positioned therebelow at the spin level located above the base level within the housing for drying. This drive engagement device is preferably positioned in registration with respect to the stack of flats to facilitate simultaneous rotational movement thereof responsive to rotation of the drive engagement device. Thereafter, the drive engagement device is rotationally driven to urge simultaneous rotational movement of the stack of flats to facilitate spin drying. A lifting head and the stack of flats thereabove then move upwardly to release the stack of flats at

the base level to allow exiting of the stack of flats from the spring drying housing along the base level. This unique configuration functions in the patentably distinct method described immediately hereabove, and as such, is patentably distinguishable from the above-identified United States Patent, and as such, the present invention as claimed is deemed to be patentably distinguishable thereover.

United States Patent No. 4,064,635 discloses an "Apparatus For Drying Plastic Trays" patented December 27, 1977 to Henry Y. Kuhl. The drying apparatus of the '635 patent includes a drying zone for receiving wet articles to be dried traveling upon a conveyor. A vertically and rotatably movable carriage assembly is positioned below the drying zone and is adapted to move upwardly to lift and move the article above the conveyor. A rotation control mechanism is secured to the carriage assembly for causing rotation thereof to increase the rotational velocity to expel liquid from the article being dried. The rotational control also is adapted to decrease the rotational velocity and stop rotation of the carriage assembly to facilitate replacing of the article on the conveyor for exit. The vertical moving mechanism is included for selectively causing the carriage to move into contact with the undersurface of the article located in the drying zone of the conveyor, and vertically move it to a position above the conveyor to facilitate drying thereof. The present invention is particularly patentably distinct when compared with the patent described hereabove. This is because

the present invention shows a novel apparatus for drying a stack of flats not shown heretofore. A housing is included which defines a base level for receiving a stack of flats moved thereinto for heating and drying thereof. A lifting head is provided which is movable up and down within the housing such as to be able to contact the stack of flats positioned thereabove at the base level to aid lifting thereof to a position above the base level. This lifting head is movable preferably in a rotatable manner relative to the housing about a lifting axis of rotation extending vertically. A stack lifting mechanism is also included positioned within the housing at a location below the base level. This lifting mechanism for stacks is capable of being positioned at a retracted level located below the base level within the housing. The stack lifting apparatus is attached to the lifting head, and is also vertically movable upwardly within the housing to be movable to the base level for facilitating engagement of the lifting head with respect to the stack of flats from beneath. It also allows lifting vertically to a spin level which is located vertically above the base level within the housing. A drive engagement apparatus is also provided mounted within the housing at a position above the stack of flats which is positioned therein at the base level. This drive mechanism is engageable and is mounted within the housing to be rotatably movable therewithin about a drive axis of rotation. The drive engagement device is adapted to engage a stack of flats from above responsive to movement of the stack of

flats upwardly and to abutting contact therewith in order to allow the urging of rotational movement of the stack of flats responsive to rotational movement of the drive engagement device. A drive is also included within the housing above the stack of flats positioned at the base level. This drive is operatively attached to the drive plate for urging rotational movement responsive to operation of the drive in order to achieve spin drying of a stack of flats held at the spin level between the drive engagement means and abutment therewith from above, and the lifting head in abutment with the stack of flats from below. As such, it is urged into contact therewith by the stack lifting device which is positioned at the stack level within the housing. The prior art patent described above does not anticipate nor render obvious the present invention as claimed, and for this reason, the present invention as detailed herein is deemed to be patentably distinguishable thereover.

United States Patent No. 4,134,215 discloses a "Process For Drying Hydrophobic Articles" patented January 16, 1979 to Henry Y. Kuhl. The '215 patent shows a process for drying hydrophobic articles including positioning of a wet article within a drying zone and placing protruding stud members of a carriage into contact with the upwardly extending cavities defined in the irregularly shaped undersurface of the wet article. The carriage is then moved upwardly to lift the article from the drying zone into a spinning position. The article is then spun by rotating the carriage at a speed sufficient to expel

any liquids therefrom by centrifugal force. The liquids so expelled are gathered by a cylindrical liquid gathering surface positioned around the article at the spinning position. The article is then returned to the drying zone therebelow by moving it downwardly out of contact with the article, and the article is removed from the drying zone. The present invention is patentably distinguishable from the above referenced patent since the present invention includes a unique dryer for drying a stack of flats, wherein a stack of flats are entry transported into a spin drying housing at a base level. The stack of flats are then engaged with respect to a rotatable lifting head. The lifting head is then lifted upwardly, and the stack of flats is engaged thereabove into abutting engagement with the drive mechanism engagement device positioned therebelow at the spin level located above the base level within the housing for drying. This drive engagement device is preferably positioned in registration with respect to the stack of flats to facilitate simultaneous rotational movement thereof responsive to rotation of the drive engagement device. Thereafter, the drive engagement device is rotationally driven to urge simultaneous rotational movement of the stack of flats to facilitate spin drying. A lifting head and the stack of flats thereabove then move upwardly to release the stack of flats at the base level to allow exiting of the stack of flats from the spin drying housing along the base level. This unique configuration functions in the patentably distinct method described immediately hereabove, and as such, is patentably

distinguishable from the above-identified United States Patent, and as such, the present invention as claimed is deemed to be patentably distinguishable thereover.

United States Patent No. 4,155,293 discloses a "Continuous Cooking Apparatus And Process" patented May 22, 1979 to A. Spiel, et al and assigned to Nabisco, Inc. The '293 patent shows an apparatus for cooking and/or leaching food pieces with a cooking liquid at elevated temperatures. It includes an elongated tank for the liquid having a product infeed end and an inclined product discharge end. An endless conveyor is driven and has an upper flight which passes through the liquid in the tank for carrying the food pieces therethrough. The portion of the endless conveyor adjacent the incline discharge portion of the tank is also inclined. Multiple mechanisms for withdrawing liquid are positioned on each side of the tank for removing liquid from the tank at spaced apart points along each side thereof. A heating means is included for heating of the withdrawing fluid. Means are further included for returning the heated withdrawn fluid to the tank at a plurality of locations along the center line thereof. A spraying device is located above the inclined portion for rinsing the food pieces traveling upon the conveyor with cooking liquid prior to discharge thereof. Also a liquid overflow mechanism is formed in the tank at the infeed end for the purpose of providing a flow of this liquid from tank spraying means to the overflow means in a direction opposite the movement of the food pieces through the tank itself.

The present invention provides a distinctive apparatus for drying a stack of flats which includes a housing defining a base level for receiving flats conveyed thereinto for drying. A lifting head is included vertically movable within the housing to move a stack of flats vertically from the base level. The movement axis of the lifting heads extends vertically. A stack lifting device is included within the housing below the base level, and is movable to a retracted level as necessary. This stack lifting mechanism is attached to the lifting head and is capable of vertical movement upwardly to facilitate engagement of the lifting head with respect to the stack of flats to facilitate movement thereof to the spin level. A drive engagement means is included mounted within the housing at a position above the stack of flats at the base level. It is adapted to engage a stack of flats from above responsive to movement thereof upwardly into abutting contact therewith for urging rotational movement of the flats responsive to rotational movement of the drive engagement means. A drive means is also included for powering the rotational movement of the drive plate. The subject invention provides a distinctively configured apparatus for drying of a stack of flats, and includes a housing defining a base level for receiving flats conveyed thereinto for drying. A lifting head is included which is vertically movable within the housing to move a stack of flats vertically from the base level. The movement axis of the lifting head extends vertically. A stack lifting device is included within the housing below the base level, and is

movable to the retracting level as needed. This lifting mechanism for stacks is attached to the lifting head for vertical movement upwardly to allow engagement of the lifting head with respect to the stack of flats to facilitate movement thereof to the spin level. A drive engagement mechanism is included mounted within the housing at a position above the stack of flats at the base level. This device is adapted to engage a stack of flats from above responsive to movement thereof upwardly into abutting contact therewith for urging rotational movement of the flats responsive to rotational movement of the drive engagement device. A drive means is also included for powering the rotational movement of the drive plate. The patent reference defined above is distinguishable from the present invention since there is no teaching of the configuration as claimed herein in the disclosure and/or claims of the above-identified patent. For this reason, the present invention is deemed to be patentably distinguishable thereover.

United States Patent No. 4,170,241 discloses an "Apparatus For Cleaning Containers" patented October 9, 1979 to J.W.M. Clapp and assigned to Thermoplastic Compounders Limited. The '241 patent discloses an apparatus designed specifically for cleaning containers which includes a tank which holds detergent solution therein. A set of guide rails define a channel for the containers which has an inlet section outside of the tank, as well as an immersion section positioned below the surface of the liquid when a tank is filled, as well as an outlet section. A

pusher system is included for pushing a sequence of containers sequentially such that each pushes the next through the channel. One or more ultrasonic transducers are mounted on the base of the tank, and a drive is included for powering the transducer to generate ultrasonic vibration waves of energy to the liquid in the tank. A rinsing device is also positioned downstream from the tank, and is adapted to spray liquid on containers emerging from the tank. A heating means is included in the tank to maintain an elevated temperature of the liquid therein. Also, a device is included for withdrawing a portion of the liquid from the tank, and for removing suspended solids therefrom, and for returning the liquid to the tank thereafter. The present invention is particularly patentably distinct when compared with the patent described hereabove. This is because the present invention shows a novel apparatus for drying a stack of flats not shown heretofore. A housing is included which defines a base level for receiving a stack of flats moved thereinto for heating and drying thereof. A lifting head is provided which is movable up and down within the housing such as to be able to contact the stack of flats positioned thereabove at the base level to aid lifting thereof to a position above the base level. This lifting head is movable preferably in a rotatable manner relative to the housing about a lifting axis of rotation extending vertically. A stack lifting mechanism is also included positioned within the housing at a location below the base level. This lifting mechanism for stacks is capable of being positioned at a

retracted level located below the base level within the housing. The stack lifting apparatus is attached to the lifting head, and is also vertically movable upwardly within the housing to be movable to the base level for facilitating engagement of the lifting head with respect to the stack of flats from beneath. It also allows lifting vertically to a spin level which is located vertically above the base level within the housing. A drive engagement apparatus is also provided mounted within the housing at a position above the stack of flats which is positioned therein at the base level. This drive mechanism is engageable and is mounted within the housing to be rotatably movable therewithin about a drive axis of rotation. The drive engagement device is adapted to engage a stack of flats from above responsive to movement of the stack of flats upwardly and to abutting contact therewith in order to allow the urging of rotational movement of the stack of flats responsive to rotational movement of the drive engagement device. A drive is also included within the housing above the stack of flats positioned at the base level. This drive is operatively attached to the drive plate for urging rotational movement responsive to operation of the drive in order to achieve spin drying of a stack of flats held at the spin level between the drive engagement means and abutment therewith from above, and the lifting head in abutment with the stack of flats from below. As such, it is urged into contact therewith by the stack lifting device which is positioned at the stack level within the housing. The prior art

patent described above does not anticipate nor render obvious the present invention as claimed, and for this reason, the present invention as detailed herein is deemed to be patentably distinguishable thereover.

United States Patent No. 4,173,830 discloses a "Dryer For Mesh Baskets" patented November 13, 1979 to D. R. Hanson. The dryer of the '830 patent is designed specifically for drying of perforated bottom articles which are carried by a conveyor having an open framework. It includes a fan assembly with an outlet providing airflow at a substantial velocity by way of an airstream. A device is included for directing the airstream toward the perforated article on the conveyor. Also, the airstream cause to move through the article and the conveyor. A vacuum mechanism is included which comprises the low pressure side of the fan, and includes a vacuum port in registration with the airstream directing means. In this manner, the vacuum port will collect air forced through the article and the conveyor. The present invention is patentably distinguishable from the above referenced patent since the present invention includes a unique dryer for drying a stack of flats, wherein a stack of flats are entry transported into a spin drying housing at a base level. The stack of flats are then engaged with respect to a rotatable lifting head. The lifting head is then lifted upwardly, and the stack of flats is engaged thereabove into abutting engagement with the drive mechanism engagement device positioned therebelow at the spin level located above the base

level within the housing for drying. This drive engagement device is preferably positioned in registration with respect to the stack of flats to facilitate simultaneous rotational movement thereof responsive to rotation of the drive engagement device. Thereafter, the drive engagement device is rotationally driven to urge simultaneous rotational movement of the stack of flats to facilitate spin drying. A lifting head and the stack of flats thereabove then move upwardly to release the stack of flats at the base level to allow exiting of the stack of flats from the spring drying housing along the base level. This unique configuration functions in the patentably distinct method described immediately hereabove, and as such, is patentably distinguishable from the above-identified United States Patent, and as such, the present invention as claimed is deemed to be patentably distinguishable thereover.

United States Patent No. 4,651,440 discloses a "Spin Drying Apparatus" patented March 24, 1987 to G. M. Karl and assigned to Eastman Kodak Company. The Karl patent discloses an apparatus for spin drying of articles, particularly for drying of articles that are shaped similar to plates. The drying apparatus includes a shaft which is rotatably movable, and has a drive motor at one end, and a rotating head assembly at the other end. The head includes a head element coaxially arranged at the other end of the shaft, with a plurality of radial arms extending outwardly. Multiple movable arms are pivotally connected to each of the radial arms, and have a plate engaging portion defined

thereon. A biasing means is included for urging the plate engaging portions of the movable arms to the plate-engaging position. Means are included for moving the movable arms against the force of the biasing means for the purpose of moving the plate-engaging portions thereof from the plate-engaging position as necessary. A containment mechanism is positioned closely surrounding the radially extending arms which includes a cover element for substantially eliminating the generation of airflow around the plate like member by rotation of the radially extending arms. The present invention is particularly patentably distinct when compared with the patent described hereabove. This is because the present invention shows a novel apparatus for drying a stack of flats not shown heretofore. A housing is included which defines a base level for receiving a stack of flats moved thereinto for heating and drying thereof. A lifting head is provided which is movable up and down within the housing such as to be able to contact the stack of flats positioned thereabove at the base level to aid lifting thereof to a position above the base level. This lifting head is movable preferably in a rotatable manner relative to the housing about a lifting axis of rotation extending vertically. A stack lifting mechanism is also included positioned within the housing at a location below the base level. This lifting mechanism for stacks is capable of being positioned at a retracted level located below the base level within the housing. The stack lifting apparatus is attached to the lifting head, and is also vertically movable

upwardly within the housing to be movable to the base level for facilitating engagement of the lifting head with respect to the stack of flats from beneath. It also allows lifting vertically to a spin level which is located vertically above the base level within the housing. A drive engagement apparatus is also provided mounted within the housing at a position above the stack of flats which is positioned therein at the base level. This drive mechanism is engageable and is mounted within the housing to be rotatably movable therewithin about a drive axis of rotation. The drive engagement device is adapted to engage a stack of flats from above responsive to movement of the stack of flats upwardly and to abutting contact therewith in order to allow the urging of rotational movement of the stack of flats responsive to rotational movement of the drive engagement device. A drive is also included within the housing above the stack of flats positioned at the base level. This drive is operatively attached to the drive plate for urging rotational movement responsive to operation of the drive in order to achieve spin drying of a stack of flats held at the spin level between the drive engagement means and abutment therewith from above, and the lifting head in abutment with the stack of flats from below. As such, it is urged into contact therewith by the stack lifting device which is positioned at the stack level within the housing. The prior art patent described above does not anticipate nor render obvious the present invention as claimed, and for this reason, the present invention as detailed herein is deemed to be

patentably distinguishable thereover.

United States Patent No. 4,702,777 discloses a "Method And Apparatus For High Capacity Washing, Sanitizing And Drying Of Stacks Of Flats" patented October 27, 1987 to Henry Y. Kuhl. The '777 patent discloses a high capacity rotary washer for drying a stack of flats including a housing with a first processing station located therein adapted to receive a stack of flats. A second processing station is located therein and is adapted to receive a stack of flats for second processing thereof. A rotatably first table is positioned within the first processing station and is adapted to receive the stack of flats positioned thereon. A rotatably movable second table is positioned within the second processing station and is adapted to receive a stack of flats positioned thereon. A first drive means is connected with respect to the first table for causing rotational movement thereof, and in a similar manner, a second drive means is connected with respect to the second table to selectively cause rotational movement thereof. A pump is included in fluid flow communication with respect to the first processing chamber, and a second processing chamber, and is adapted to pump cleaning solution therebetween. A first wash line is in fluid flow communication with respect to the pump and the first processing chamber. A second wash line is in fluid flow communication with the pump and the second processing station. A cleaning solution source is also included with respect to the first processing chamber for supplying cleaning solution thereto. A first

sanitizing spray conduit is positioned within the first processing chamber and defines multiple first apertures therealong for selectively dispensing of solutions therefrom onto the stack of flats. A second processing station is positioned within the second processing chamber, and defines a plurality of second apertures for dispensing solutions onto a stack. Also, a sanitizing spray supply is selectively positioned in fluid flow communication with respect to the first sanitizing spray conduit, and a second sanitizing spray conduit, for supplying sanitizing spray thereto. The subject invention provides a distinctively configured apparatus for drying of a stack of flats, and includes a housing defining a base level for receiving flats conveyed thereinto for drying. A lifting head is included which is vertically movable within the housing to move a stack of flats vertically from the base level. The movement axis of the lifting head extends vertically. A stack lifting device is included within the housing below the base level, and is movable to the retracting level as needed. This lifting mechanism for stacks is attached to the lifting head for vertical movement upwardly to allow engagement of the lifting head with respect to the stack of flats to facilitate movement thereof to the spin level. A drive engagement mechanism is included mounted within the housing at a position above the stack of flats at the base level. This device is adapted to engage a stack of flats from above responsive to movement thereof upwardly into abutting contact therewith for urging rotational movement of the flats responsive to rotational

movement of the drive engagement device. A drive means is also included for powering the rotational movement of the drive plate. The patent reference defined above is distinguishable from the present invention since there is no teaching of the configuration as claimed herein in the disclosure and/or claims of the above-identified patent. For this reason, the present invention is deemed to be patentably distinguishable thereover.

United States Patent No. 5,067,192 discloses an "Automatic Machine For Washing Self-Service Trays and Similar Items" patented November 26, 1991 to F. Guelfi et al and assigned to Colged S.p.A. The Guelfi et al patent discloses a machine for automatically washing trays, which includes a sucker or suction cup type device operated by pneumatic cylinders which serve to pickup the soiled trays from the first stacking trolley. They are conveyed through a washing and drying tunnel toward a second trolley on which the trays are then restacked. The cleaning device occupies a position coinciding substantially with that of the suction cup device, and includes a reservoir charged with compressed air. A jet of compressed air is directed at each successive tray immediately prior to the approach of the suction cup mechanism in such a way as to clear the tray of any residual waste material, and enable the suction cup device to establish a firm grip. The conveying system includes a horizontally disposed power driven belt extending along the entire length of the tunnel on which the trays remain in position without the use of constraints. A mechanism is also included for emptying the trays

of rinsing water before being dried which is installed internally within the tunnel beyond the washing station itself. The present invention is patentably distinguishable from the above referenced patent since the present invention includes a unique dryer for drying a stack of flats, wherein a stack of flats are entry transported into a spin drying housing at a base level. The stack of flats are then engaged with respect to a rotatable lifting head. The lifting head is then lifted upwardly, and the stack of flats is engaged thereabove into abutting engagement with the drive mechanism engagement device positioned therebelow at the spin level located above the base level within the housing for drying. This drive engagement device is preferably positioned in registration with respect to the stack of flats to facilitate simultaneous rotational movement thereof responsive to rotation of the drive engagement device. Thereafter, the drive engagement device is rotationally driven to urge simultaneous rotational movement of the stack of flats to facilitate spin drying. A lifting head and the stack of flats thereabove then move upwardly to release the stack of flats at the base level to allow exiting of the stack of flats from the spin drying housing along the base level. This unique configuration functions in the patentably distinct method described immediately hereabove, and as such, is patentably distinguishable from the above-identified United States Patent, and as such, the present invention as claimed is deemed to be patentably distinguishable thereover.

United States Patent No. 5,185,041 discloses a "Machine For Washing Plastic Fragments To Prepare Them For Recycling" patented February 9, 1993 to R. M. Anderson et al. The machine of the Anderson et al patent is designed for washing plastic articles for recycling use thereof. The method according to this invention includes providing a defined pathway with an inlet and an outlet on opposite sides of the axis thereof. Fragments to be washed are continuously loaded through the inlet. The pathway revolves axially, and the fragments turn over which causes the fragments to rub against each other during this rotation. Wash water is then sprayed onto the fragments along the first distance within the pathway. Rinse water is sprayed directly on the fragments along a second distance within the pathway. The wash fragments are then removed from the outlet. The present invention is particularly patentably distinct when compared with the patent described hereabove. This is because the present invention shows a novel apparatus for drying a stack of flats not shown heretofore. A housing is included which defines a base level for receiving a stack of flats moved thereinto for heating and drying thereof. A lifting head is provided which is movable up and down within the housing such as to be able to contact the stack of flats positioned thereabove at the base level to aid lifting thereof to a position above the base level. This lifting head is movable preferably in a rotatable manner relative to the housing about a lifting axis of rotation extending vertically. A stack lifting mechanism is also included positioned within the

housing at a location below the base level. This lifting mechanism for stacks is capable of being positioned at a retracted level located below the base level within the housing. The stack lifting apparatus is attached to the lifting head, and is also vertically movable upwardly within the housing to be movable to the base level for facilitating engagement of the lifting head with respect to the stack of flats from beneath. It also allows lifting vertically to a spin level which is located vertically above the base level within the housing. A drive engagement apparatus is also provided mounted within the housing at a position above the stack of flats which is positioned therein at the base level. This drive mechanism is engageable and is mounted within the housing to be rotatably movable therewithin about a drive axis of rotation. The drive engagement device is adapted to engage a stack of flats from above responsive to movement of the stack of flats upwardly and to abutting contact therewith in order to allow the urging of rotational movement of the stack of flats responsive to rotational movement of the drive engagement device. A drive is also included within the housing above the stack of flats positioned at the base level. This drive is operatively attached to the drive plate for urging rotational movement responsive to operation of the drive in order to achieve spin drying of a stack of flats held at the spin level between the drive engagement means and abutment therewith from above, and the lifting head in abutment with the stack of flats from below. As such, it is

urged into contact therewith by the stack lifting device which is positioned at the stack level within the housing. The prior art patent described above does not anticipate nor render obvious the present invention as claimed, and for this reason, the present invention as detailed herein is deemed to be patentably distinguishable thereover.

United States Patent No. 5,212,876 discloses an "Automatic Spin Dryer" patented May 25, 1993 to B. I. Berit and assigned to Sanborn, Inc. The spin dryer of the Berit patent is designed specifically for drying vegetables and other similar items and includes a support with at least three surrounding posts having lateral spaces therebetween, and providing clearance for a conveyor extending from the dryer. The housing is suspended from the support and includes an annular bottom wall, a side wall and a top wall with an opening therein. An open top basket is rotatably mounted in the housing which has a cylindrical side wall and a conical bottom wall movable along a vertical axis between a closed position and an open position. This moving means allows the basket bottom wall to move between the two positions, and is suspended below the basket bottom wall to minimize the overall height of the total apparatus. The present invention is patentably distinguishable from the above referenced patent since the present invention includes a unique dryer for drying a stack of flats, wherein a stack of flats are entry transported into a spin drying housing at a base level. The stack of flats are then engaged with respect to a rotatable

lifting head. The lifting head is then lifted upwardly, and the stack of flats is engaged thereabove into abutting engagement with the drive mechanism engagement device positioned therebelow at the spin level located above the base level within the housing for drying. This drive engagement device is preferably positioned in registration with respect to the stack of flats to facilitate simultaneous rotational movement thereof responsive to rotation of the drive engagement device. Thereafter, the drive engagement device is rotationally driven to urge simultaneous rotational movement of the stack of flats to facilitate spin drying. A lifting head and the stack of flats thereabove then move upwardly to release the stack of flats at the base level to allow exiting of the stack of flats from the spring drying housing along the base level. This unique configuration functions in the patentably distinct method described immediately hereabove, and as such, is patentably distinguishable from the above-identified United States Patent, and as such, the present invention as claimed is deemed to be patentably distinguishable thereover.

United States Patent No. 5,802,733 discloses a "Dryer System For Vegetables" patented September 8, 1998 to J. Hougham and assigned to The Great Nother Equipment Company. The dryer of the '733 patent is designed specifically for drying vegetables and is used for a process wherein pieces of produce in a produce basket are lifted by a worker when full of produce. This produce basket will have a perforated bottom preferably with openings

sufficiently small to contain the produce under centrifugal forces and sufficiently large to enable water to exit therethrough during centrifugal rotation. With the produce still in the basket, the produce basket itself will be releasably secured to a turntable assembly for rotation thereof. The assembly will rotate about a spinning axis and the product basket will be secured to the turntable assembly with the perforated bottom facing away from the axis of spinning thereof. Thereafter, rotation of the turntable assembly with the produce basket secured thereto, will be performed until water in the produce is centrifugally urged out of the produce, and through the openings in the perforated bottom wall of the basket. The present invention is particularly patentably distinct when compared with the patent described hereabove. This is because the present invention shows a novel apparatus for drying a stack of flats not shown heretofore. A housing is included which defines a base level for receiving a stack of flats moved thereinto for heating and drying thereof. A lifting head is provided which is movable up and down within the housing such as to be able to contact the stack of flats positioned thereabove at the base level to aid lifting thereof to a position above the base level. This lifting head is movable preferably in a rotatable manner relative to the housing about a lifting axis of rotation extending vertically. A stack lifting mechanism is also included positioned within the housing at a location below the base level. This lifting mechanism for stacks is capable of

being positioned at a retracted level located below the base level within the housing. The stack lifting apparatus is attached to the lifting head, and is also vertically movable upwardly within the housing to be movable to the base level for facilitating engagement of the lifting head with respect to the stack of flats from beneath. It also allows lifting vertically to a spin level which is located vertically above the base level within the housing. A drive engagement apparatus is also provided mounted within the housing at a position above the stack of flats which is positioned therein at the base level. This drive mechanism is engageable and is mounted within the housing to be rotatably movable therewithin about a drive axis of rotation. The drive engagement device is adapted to engage a stack of flats from above responsive to movement of the stack of flats upwardly and to abutting contact therewith in order to allow the urging of rotational movement of the stack of flats responsive to rotational movement of the drive engagement device. A drive is also included within the housing above the stack of flats positioned at the base level. This drive is operatively attached to the drive plate for urging rotational movement responsive to operation of the drive in order to achieve spin drying of a stack of flats held at the spin level between the drive engagement means and abutment therewith from above, and the lifting head in abutment with the stack of flats from below. As such, it is urged into contact therewith by the stack lifting device which is positioned at the stack level within the housing.

The prior art patent described above does not anticipate nor render obvious the present invention as claimed, and for this reason, the present invention as detailed herein is deemed to be patentably distinguishable thereover.

United States Patent No. 6,298,575 discloses a "Passive Spin Dryer For Continuous And Batch Processing" patented October 9, 2001 to J. E. Aikins et al. The construction of the device in the '575 patent is for the purpose for centrifugally drying materials which includes a plurality of elongated conveyors disposed adjacent to one another about a central axis such that they extend generally parallel to the central axis and form a polygon. Each conveyor has a conveyor drive to advance the conveyor as the conveyor is rotated about the central axis. Each conveyor drive includes a one-way bearing. A drive mechanism is connected to the conveyors outside of the polygon for the purpose of rotating the conveyors about the central axis as needed. The subject invention provides a distinctively configured apparatus for drying of a stack of flats, and includes a housing defining a base level for receiving flats conveyed thereinto for drying. A lifting head is included which is vertically movable within the housing to move a stack of flats vertically from the base level. The movement axis of the lifting head extends vertically. A stack lifting device is included within the housing below the base level, and is movable to the retracting level as needed. This lifting mechanism for stacks is attached to the lifting head for vertical movement upwardly to allow

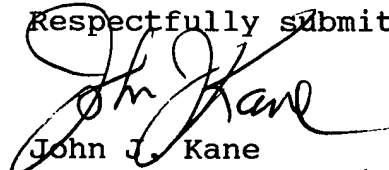
engagement of the lifting head with respect to the stack of flats to facilitate movement thereof to the spin level. A drive engagement mechanism is included mounted within the housing at a position above the stack of flats at the base level. This device is adapted to engage a stack of flats from above responsive to movement thereof upwardly into abutting contact therewith for urging rotational movement of the flats responsive to rotational movement of the drive engagement device. A drive means is also included for powering the rotational movement of the drive plate. The patent reference defined above is distinguishable from the present invention since there is no teaching of the configuration as claimed herein in the disclosure and/or claims of the above-identified patent. For this reason, the present invention is deemed to be patentably distinguishable thereover.

United States Patent Application Publication No. 2002/0033550 A1 discloses a "Method For Recycling Used-Up Plastic Products And Washing Process Of Crushed Plastic And Apparatus Therefor" published March 21, 2002 to Kazuyoshi Suehara and assigned to Fuji Photo Film Co., Ltd. This apparatus is for the purpose of plastic recycling and includes the initial coarse-crushing of plastic waste products. The plastic materials are then separated from other foreign matters by an airblow separator. The separated plastics are then finely crushed and washed by a process using a circulation flow including a spiral flow in which the inner action between the crushed plastics facilitates cleaning without washing agents. The washed plastics

are then dewatered, dried, and metallic matters are removed by metal detectors. They are then fed directly without pelletizing to an injection molding machine. The present invention is patentably distinguishable from the above referenced patent since the present invention includes a unique dryer for drying a stack of flats, wherein a stack of flats are entry transported into a spin drying housing at a base level. The stack of flats are then engaged with respect to a rotatable lifting head. The lifting head is then lifted upwardly, and the stack of flats is engaged thereabove into abutting engagement with the drive mechanism engagement device positioned therebelow at the spin level located above the base level within the housing for drying. This drive engagement device is preferably positioned in registration with respect to the stack of flats to facilitate simultaneous rotational movement thereof responsive to rotation of the drive engagement device. Thereafter, the drive engagement device is rotationally driven to urge simultaneous rotational movement of the stack of flats to facilitate spin drying. A lifting head and the stack of flats thereabove then move upwardly to release the stack of flats at the base level to allow exiting of the stack of flats from the spin drying housing along the base level. This unique configuration functions in the patentably distinct method described immediately hereabove, and as such, is patentably distinguishable from the above-identified United States Patent, and as such, the present invention as claimed is deemed to be patentably distinguishable thereover.

The above art constitutes the closest art of which the applicant is aware, and in view of the arguments submitted hereabove, applicant deems that the present application as currently pending includes claims which are patentably distinguishable thereover. For this reason, applicant deems that the present application is now in condition for the issuance of a Notice of Allowance, and such action is hereby respectfully solicited.

Respectfully submitted,

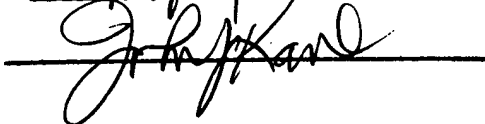

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(37 CFR 1.98(b))

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10/715,648

APPLICANT

Jeffrey B. Kuhl

FILING DATE

11/18/03

GROUP

3749

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE if appropriate
	2609100	9-5-52	Vitale			
	3300871	1-31-67	O'Connor			
	3386180	6-4-68	Balz et al			
	3998656	12-21-76	Grotto			
	4064635	12-22-77	Kuhl			
	4134215	1-16-79	Kuhl			
	4155293	5-22-79	Spiel et al			
	4170241	10-4-79	Clapp			
	4173830	11-13-79	Hanson			
	4651440	3-24-87	Karl			
	4702777	10-22-87	Kuhl			

FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date**, Relevant Pages, Place of Publication***)

EXAMINER

DATE CONSIDERED

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